

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A method of ~~for~~ depositing a silicon germanium film on a substrate comprising:

providing a substrate within a process chamber;

heating the substrate to a temperature within a range from about 500°C to about 900°C;

exposing the substrate to a first deposition gas comprising ~~SiH₄, GeH₄, HCl~~ silane, germanium, hydrogen chloride, a carrier gas and at least one dopant gas; ~~and depositing to deposit~~ a first silicon germanium material epitaxially on the substrate, wherein the first silicon germanium material contains a dopant concentration of greater than 1×10^{20} atoms/cm³; and

exposing the substrate to a second deposition gas comprising dichlorosilane and a germanium source to deposit a second silicon germanium material on the substrate.

2. (Currently Amended) The method of claim 1, wherein the at least one dopant gas is a boron containing compound selected from the group consisting of ~~BH₃, B₂H₆, B₃H₈, Me₃B, Et₃B~~ borane, diborane, triborane, trimethylborane, triethylborane and derivatives thereof.

3. (Currently Amended) The method of claim 2, wherein the first silicon germanium material is deposited ~~with~~ containing a boron concentration within a range from about ~~[[1]]~~ 2×10^{20} atoms/cm³ to about 2.5×10^{21} atoms/cm³.

4. (Original) The method of claim 1, wherein the at least one dopant gas includes an arsenic containing compound or a phosphorus containing compound.

5. (Currently Amended) The method of claim 1, wherein the carrier gas is selected from the group consisting of ~~H₂, Ar, N₂, He~~ hydrogen, argon, nitrogen, helium and combinations thereof.
6. (Currently Amended) The method of claim 5, wherein the first deposition gas further comprises a member selected from the group of consisting of a carbon source, ~~Cl₂SiH₂~~ dichlorosilane and combinations thereof.
7. (Currently Amended) The method of claim 5, wherein the temperature is within a range from about 600°C to about 750°C and the process chamber is at a pressure within a range from about 0.1 Torr to about 200 Torr.
8. (Currently Amended) The method of claim 5, wherein the silicon germanium film ~~is grown to~~ has a thickness within a range from about 100 Å to about 3,000 Å.
9. (Original) The method of claim 8, wherein the silicon germanium film is deposited within a device used for CMOS, Bipolar or BiCMOS application.
10. (Currently Amended) The method of claim 9, wherein the silicon germanium film is deposited during a fabrication step is selected from the group consisting of contact plug, source/drain extension, elevated source/drain and bipolar transistor.
11. (Currently Amended) The method of claim 1, wherein the first silicon germanium material is deposited with a first thickness, ~~therein SiH₄ is replaced by Cl₂SiH₂~~, and a second silicon germanium material is deposited with a second thickness on the first silicon germanium material.
12. (Currently Amended) The method of claim 1, wherein a silicon-containing material is deposited on the substrate before the first silicon germanium material.

13. (Currently Amended) The method of claim 12, wherein the silicon-containing material is deposited by a deposition process comprising Cl_2SiH_2 dichlorosilane.

14. (Currently Amended) A selective epitaxial method ~~of growing~~ for depositing a silicon germanium film on a substrate comprising:

providing a substrate within a process chamber;

heating the substrate to a temperature within a range from about 500°C to about 900°C; and

exposing the substrate to a deposition gas comprising SiH_4 silane, a germanium source, an etchant source, a carrier gas and at least one dopant gas; ~~and growing to~~ selectively form a silicon germanium material ~~with~~ containing a dopant concentration within a range from about 2×10^{20} atoms/cm³ to about 2.5×10^{21} atoms/cm³.

15. (Currently Amended) The method of claim 14, wherein the germanium source is selected from the group consisting of GeH_4 , Ge_2H_6 , Ge_3H_8 , Ge_4H_{10} germane, digermane, trigermane, tetragermane and derivatives thereof.

16. (Currently Amended) The method of claim 15, wherein the carrier gas is selected from the group consisting of H_2 , Ar , N_2 , He hydrogen, argon, nitrogen, helium and combinations thereof.

17. (Currently Amended) The method of claim 16, wherein the temperature is within a range from about 600°C to about 750°C and the process chamber is at a pressure within a range from about 0.1 Torr to about 200 Torr.

18. (Currently Amended) The method of claim 17, wherein the etchant source is selected from the group consisting of HCl , SiCl_4 , CCl_4 , H_2CCl_2 , Cl_2 , hydrogen chloride, tetrachlorosilane, tetrachloromethane, dichloromethane, chlorine, derivatives thereof and combinations thereof.

19. (Currently Amended) The method of claim 14, wherein the at least one dopant gas is a boron containing compound selected from the group consisting of BH_3 , B_2H_6 , B_3H_8 , Me_3B , Et_3B borane, diborane, triborane, trimethylborane, triethylborane and derivatives thereof.
20. (Original) The method of claim 14, wherein the at least one dopant gas is selected from the group consisting of an arsenic containing compound and a phosphorus containing compound.
21. (Currently Amended) The method of claim 14, wherein the deposition gas further comprises a member selected from the group consisting of a carbon source, Cl_2SiH_2 dichlorosilane and combinations thereof.
22. (Currently Amended) The method of claim 17, wherein the silicon germanium film ~~is grown to~~ has a thickness within a range from about 100 Å to about 3,000 Å.
23. (Original) The method of claim 22, wherein the silicon germanium film is deposited within a device used for CMOS, Bipolar or BiCMOS application.
24. (Currently Amended) The method of claim 23, wherein the silicon germanium film is deposited during a fabrication step is selected from the group consisting of contact plug, source/drain extension, elevated source/drain and bipolar transistor.
25. (Currently Amended) The method of claim 14, wherein the silicon germanium material is deposited with a first thickness, ~~therein SiH_4~~ thereafter, the silane is replaced by Cl_2SiH_2 dichlorosilane, and a second silicon germanium material is deposited with a second thickness on the silicon germanium material.
26. (Previously Presented) The method of claim 14, wherein a silicon-containing material is deposited on the substrate before the silicon germanium material.

27. (Currently Amended) The method of claim 26, wherein the silicon-containing material is deposited by a deposition process comprising Cl_2SiH_2 dichlorosilane.

28-41. (Cancelled)

42. (Currently Amended) A method ~~of~~ for depositing a silicon ~~[[containing]]~~ germanium film on a substrate comprising:

placing a substrate within a process chamber;

heating the substrate to a temperature within a range from about 500°C to about 900°C; and

~~maintaining the process chamber at a pressure in a range from about 0.1 Torr to about 200 Torr;~~

exposing the substrate to a deposition gas comprising a silicon-containing gas, a germanium source, ~~HCl, at least one~~ hydrogen chloride and a boron-containing dopant gas and ~~a carrier gas selected from the group consisting of N₂, Ar, He and combinations thereof; and depositing to~~ selectively deposit a silicon ~~[[containing]]~~ germanium material epitaxially on the substrate, wherein the silicon germanium material contains a boron concentration of greater than about 1×10^{20} atoms/cm³.

43-55. (Cancelled)